

Listing of Claims

This Listing of Claims shall replace all prior versions and listings of claims in the application.

1. (Currently Amended) An isolated polynucleotide molecule comprising:

(a) a first nucleic acid molecule ~~at least 90% identical to~~ with SEQ ID NO: 1;
~~wherein said first nucleic acid molecule encodes an aspartate kinase (ask) polypeptide at least 80% identical to SEQ ID NO: 2, wherein said ask polypeptide has aspartate kinase activity in *Corynebacterium*;~~

(b) a second nucleic acid molecule ~~at least 90% identical to~~ with SEQ ID NO: 3;
~~wherein said second nucleic acid molecule encodes an aspartate semialdehyde dehydrogenase (asd) polypeptide at least 80% identical to SEQ ID NO: 4, wherein said asd polypeptide has aspartate semialdehyde dehydrogenase activity in *Corynebacterium*;~~

(c) a third nucleic acid molecule ~~at least 90% identical to~~ with SEQ ID NO: 5,
~~wherein said third nucleic acid molecule encodes a dihydrodipicolinate reductase polypeptide at least 80% identical to SEQ ID NO: 6, wherein said dihydrodipicolinate reductase polypeptide has dihydrodipicolinate reductase activity in *Corynebacterium*; and~~

(d) a fourth nucleic acid molecule ~~at least 90% identical to~~ with SEQ ID NO: 7;
~~wherein said fourth nucleic acid molecule encodes a diaminopimelate dehydrogenase (ddh) polypeptide at least 80% identical to SEQ ID NO: 8, wherein said ddh polypeptide has diaminopimelate dehydrogenase (ddh) activity in *Corynebacterium*.~~

2. (Cancelled)

3. (Currently Amended) The polynucleotide molecule of claim 2 1, ~~wherein said polynucleotide molecule additionally comprises a fifth~~ comprising an ORF2 nucleic acid molecule ~~encoding~~; with SEQ ID NO:9; and a lysA nucleic acid molecule with SEQ ID NO:11.

(a) ~~a complete ORF2 polypeptide, wherein said fifth nucleic acid molecule is at least 90% identical to SEQ ID NO: 9 and encodes an ORF2 polypeptide with an amino acid sequence at least 80% identical to SEQ ID NO: 10, wherein said ORF2 polypeptide increases lysine synthesis in *Corynebacterium*; or~~

(b) ~~a truncated ORF2 polypeptide, wherein said fifth nucleic acid molecule is at least 25% identical to SEQ ID NO: 9, and wherein said truncated ORF2 polypeptide has an amino acid sequence at least 25% identical to SEQ ID NO: 10 and has a length, measured in total number of amino acids, of at least 25% of the full length of a polypeptide consisting of SEQ ID NO: 10, and wherein said ORF2 polypeptide increases lysine synthesis in *Corynebacterium*.~~

4. (Cancelled)

5. (Currently Amended) The polynucleotide molecule of claim 4 3, wherein said polynucleotide molecule additionally comprises a P1 promoter element of SEQ ID NO: 15.

6. (Previously Presented) The polynucleotide molecule of claim 5, wherein said P1 promoter element is adjacent to said nucleic acid encoding diaminopimelate decarboxylase.

7-15. (Cancelled)

16. (Original) A vector comprising the isolated polynucleotide molecule of claim 1.

17. (Previously Presented) A host cell comprising the vector of claim 16.

18. (Previously Presented) The host cell of claim 17, wherein said host cell is a prokaryotic cell.

19. (Previously Presented) The host cell of claim 17, wherein said host cell is a eukaryotic cell.

20. (Previously Presented) The host cell of claim 17, wherein said host cell is a cell of the genus *Corynebacterium*.

21. (Original) The host cell of claim 17, wherein said host cell is an *Escherichia coli* cell.

22. (Original) A method for transforming a host cell comprising:

(a) transforming a host cell with the polynucleotide molecule of claim 1, wherein said isolated polynucleotide molecule is stably integrated into said host cell's chromosome; and

(b) selecting a transformed host cell.

23. (Original) A method for transforming a host cell comprising:

(a) transforming a host cell with the polynucleotide molecule of claim 1, wherein said isolated polynucleotide molecule is maintained in said host cell as extrachromosomal DNA; and

(b) selecting a transformed host cell.

24-30. (Cancelled)

31. (Previously Presented) The host cell of claim 17 wherein said host cell is of the genus *Brevibacterium*.

32. (Previously Presented) The host cell of claim 31 wherein said host cell is *Brevibacterium flavum*.

33. (Previously Presented) The host cell of claim 31 wherein said host cell is *Brevibacterium lactofermentum*.

34. (Currently Amended) An isolated ~~The~~ host cell, ~~of claim 31~~ wherein said host cell is of the genus *Brevibacterium* selected from the group consisting of the cells deposited as NRRL-B30218, NRRL-B30219, NRRL-B30220, NRRL-B30221, NRRL-B30222, NRRL-B30234, and NRRL-B30235, ~~NRRL-B30410, NRRL-B30458, NRRL-B30459 and NRRL-B30522.~~

35. (Currently Amended) ~~The~~ An isolated host cell, ~~of claim 20~~ wherein said host cell is selected from the group consisting of the cells deposited as NRRL-B30236, and NRRL-B30237, ~~NRRL-B30458, and NRRL-B30522.~~

36. (Previously Presented) The host cell of claim 21 wherein said *E. coli* cell is deposited as NRRL-B30228.

37. (Previously Presented) A vector comprising the isolated polynucleotide of Claim 1 and a vector selected from the group consisting of pBR322, CoE1, PSC101, pACYC184, pi-VX, pET, pQE70, pQE60, pQE-9, pBs, phagescript, pziX174, pBlueScript SK, pBsKS, pNH8a, pNH16a, pNH18a, pNH46a, pTrc99A, pKK223-3, and pKK233-3.

38. (Previously Presented) The vector of claim 16 further comprising one or more control regions operably linked to said vector, said control region selected from one or more of the group of control regions consisting of inducer binding sites, repressor binding sites, and enhancers.

39. (Currently Amended) The vector of Claim 16, wherein said vector is selected from the group consisting of pDElia2_{FC5}-KDB, pK184-KDBH, and pDElia2_{FC5}-KDB2, ~~and~~ pDElia2_{FC5}-KDB2HL.

40-44. (Cancelled)

45. (New) An isolated host cell, wherein said host cell is selected from the group consisting of the cells deposited as NRRL-B30410, NRRL-B30458, NRRL-B30459, and NRRL-B30522.